AERIAL PACKAGE DELIVERY SYSTEM

BACKGROUND

Unmanned aerial vehicles (UAVs) comprise a variety of vehicles, from conventional fixed wing airplanes, to helicopters, to ornithopters (i.e., machines that fly like birds), and are used in a variety of roles. They can be remotely piloted by a pilot on the ground or can be autonomous or semi-autonomous vehicles that fly missions using preprogrammed coordinates, global positioning system (GPS) navigation, etc. UAVs also include remote control helicopters and airplanes used by hobbyists.

UAVs can be equipped with cameras to provide imagery during flight, which may be used for navigational or other purposes (e.g., to identify a house address). UAVs can also be equipped with sensors to provide local weather and atmospheric conditions, radiation levels, and other conditions. UAVs can also include cargo bays, hooks, or other means for carrying payloads.

Newer generation UAVs can also provide significant payload capabilities. As a result, UAVs can also be used for delivering packages, groceries, mail, and other items. The use of UAVs for deliveries can reduce costs and increase speed and accuracy. However, landing a UAV at a delivery location may be problematic for multiple reasons, such as the presence of obstacles (e.g., trees, power lines, etc.) and the power requirements of descending and ascending from the delivery location, among other reasons.

BRIEF DESCRIPTION OF THE DRAWINGS

The detailed description is set forth with reference to the accompanying figures. In the figures, the left-most digit(s) of a reference number identifies the figure in which the reference number first appears. The use of the same reference numbers in different figures indicates similar or identical items or features.

FIG. **1** is a pictorial flow diagram of an illustrative process for delivering packages using an unmanned aerial vehicle (UAV) and a shipping label parachute system, in accordance with some examples of the present disclosure.

FIG. **2** is a front, perspective view of a shipping label parachute system in the deployed position attached to a package, in accordance with some examples of the present disclosure.

FIG. **3**A is a front, perspective, exploded view of the shipping label parachute system of FIG. **2** in the stowed position, in accordance with some examples of the present disclosure.

FIG. **3**B is a front, perspective, exploded view of the shipping label parachute system with an adhesive static line in the stowed position, in accordance with some examples of the present disclosure.

FIG. **4** is a front, perspective, detailed view of the shipping label parachute system of FIG. **2** in the deployed position and showing a harness and shock absorber in greater detail, in accordance with some examples of the present disclosure.

FIG. **5** is a top plan view of a parachute canopy for the shipping label parachute system of FIG. **2** in the deployed position and showing a plurality of additional identifying features, in accordance with some examples of the present disclosure.

FIG. **6**A is a front, perspective views of a shipping label parachute system of FIG. **2** in the stowed position including two address labels attached to a shipping container using an adhesive backing or adhesive sheet, in accordance with some examples of the present disclosure.

FIG. **6**B is a front, perspective views of a shipping label parachute system of FIG. **2** in the stowed position including two address labels attached to a shipping container using a plurality of straps, in accordance with some examples of the present disclosure.

FIG. **7**A is bottom plan view of the shipping label parachute system of FIG. **2** with a plurality of parachute cords attached to a backing sheet in a substantially radial pattern, in accordance with some examples of the present disclosure.

FIG. **7**B is bottom plan view of the shipping label parachute system of FIG. **2** with the plurality of parachute cords attached to the backing sheet in a substantially spiral pattern, in accordance with some examples of the present disclosure.

FIG. **7**C is bottom plan view of the shipping label parachute system of FIG. **2** with the plurality of parachute cords attached to the shipping container using one or more straps, in accordance with some examples of the present disclosure.

FIG. **8**A is a front, perspective of an illustrative UAV for use with the shipping label parachute system of FIG. **2** to deliver packages, in accordance with some examples of the present disclosure.

FIG. **8**B is a front, perspective of an illustrative UAV for use with the shipping label parachute system with an adhesive static line, in accordance with some examples of the present disclosure.

FIG. **9** is a pictorial flow diagram of an illustrative process for preparing packages for delivery by a UAV utilizing the shipping label parachute system, in accordance with some examples of the present disclosure.

FIGS. **10**A and **10**B are pictorial flow diagrams of an illustrative process for delivering packages by a UAV utilizing the shipping label parachute system, in accordance with some examples of the present disclosure.

FIGS. **11**A-**11**C depict front, perspective views of small (FIG. **11**A), medium (FIG. **11**B), and large (FIG. **11**C) parachute systems and front views of small (FIG. **11**A) medium (FIG. **11**B) and large (FIG. **11**C) shipping label parachute systems, in accordance with some examples of the present disclosure.

FIG. **12** is a front, perspective view of a large package with multiple shipping label parachute systems, in accordance with some examples of the present disclosure.

DETAILED DESCRIPTION

Examples of the present disclosure relate generally to shipping labels, and specifically to a shipping label parachute system to enable the delivery of packages by unmanned aerial vehicles ("UAVs") or other aerial vehicles. The shipping label parachute system can function as a conventional shipping label and can attach to packages in a conventional manner, but can include parachute components to enable packages to be safely dropped from UAVs, or other aerial vehicles, for delivery. The shipping label parachute system can comprise multiple sizes for delivery of different weight and size packages.

As discussed above, improvements in battery and propulsion system components, among other things, have increased the payload capacity and range of many UAVs. As a result, local delivery of packages and other objects via UAV has become practical. As a result, it may be desirable to have a system and method to enable a package to be